CITY OF WEIPPE (PWS 2180037)
SOURCE WATER ASSESSMENT REPORT

February 27, 2003

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Source Water Assessment for City of Weippe, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The City of Weippe drinking water system consists of two ground water wells: Small Well N #1 and Big Well S #2. Well #1 is the primary well of the system and produces approximately 135 gallons per minute (gpm) of water. Though it is the smaller of the two wells, it supplies water to the City of Weippe and also to Pleasant Acres. Well #2 is used for less than 60 days per year as a backup well and produces approximately 275 gpm of water. Both wells are located approximately one-fourth mile south of the City of Weippe near Jim Ford Creek. Well #1 is approximately 450 feet north of Well #2. The drinking water from the wells is stored in a 250,000-gallon metal standpipe tank that was installed in 1968. No treatment system exists at the wells but chlorine is added to the storage tank when contamination is detected or when the lines have been repaired. The City of Weippe drinking water system currently serves approximately 500 people through 225 connections.

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential Contaminants/Land Uses are divided into four categories: inorganic contaminants (IOCs, e.g. nitrates, arsenic), volatile organic contaminants (VOCs, e.g. petroleum products), synthetic organic contaminants (SOCs, e.g. pesticides), and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

In terms of total susceptibility, both wells of the City of Weippe rate moderate for all potential contaminant categories: IOCs, VOCs, SOCs, and microbial contaminants. The low hydrologic sensitivity and the moderate system construction combined with the moderate potential contaminant/land use of the well contributed to the overall susceptibility of the City of Weippe wells

No VOCs or SOCs have ever been detected in the system. Trace concentrations of the IOCs fluoride, lead, nitrate, and sodium have been detected in Well #1 and in the distribution system, but at concentrations significantly below maximum contamination levels (MCLs) as set by the EPA. Alpha and beta particles (radionuclides) have also been detected in the distribution system and in Well #1 at levels below the MCLs. Total coliform bacteria have been detected in the distribution system in November 1999 and in October 2001. However, no coliform bacteria have been detected at either of the wells.

Because Well #2 only supplies water to the system for 60 days of the year, the well is only tested for nitrate and total coliform bacteria. No nitrate or total coliform bacteria have been detected in the well.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the City of Weippe, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Actions should be taken to keep a 50-foot radius perimeter clear of all potential contaminants from around the wellhead. Any contaminant spills within the delineation should be carefully monitored and dealt with. As much of the designated protection areas are outside the direct jurisdiction of the City of Weippe drinking water system, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the wells should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus on any drinking water protection plan as the delineation contains some urban and residential land uses. Public education topics could include proper lawn care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are transportation corridors through the delineations, the Idaho Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Clearwater Soil and Water Conservation District, and the Natural Resource Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific bet management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR CITY OF WEIPPE, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the rankings of this assessment mean.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the EPA to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community, based on its own needs and limitations, should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The City of Weippe drinking water system consists of two ground water wells: Small Well N #1 and Big Well S #2. Well #1 is the primary well of the system and produces approximately 135 gpm of water. Though it is the smaller of the two wells, it supplies water to the City of Weippe and also to Pleasant Acres. Well #2 is used for less than 60 days per year as a backup well and produces approximately 275 gpm of water. Both wells are located approximately one-fourth mile south of the City of Weippe near Jim Ford Creek. Well #1 is approximately 450 feet north of Well #2. The drinking water from the wells is stored in a 250,000-gallon metal standpipe tank that was installed in 1968. No treatment system exists at the wells but chlorine is added to the storage tank when contamination is detected or when the lines have been repaired. The City of Weippe drinking water system currently serves approximately 500 people through 225 connections (Figure 1).

In terms of total susceptibility, both wells of the City of Weippe rate moderate for all potential contaminant categories: IOCs, VOCs, SOCs, and microbial contaminants. The low hydrologic sensitivity and the moderate system construction combined with the moderate potential contaminant/land use of the well contributed to the overall susceptibility of the City of Weippe wells.

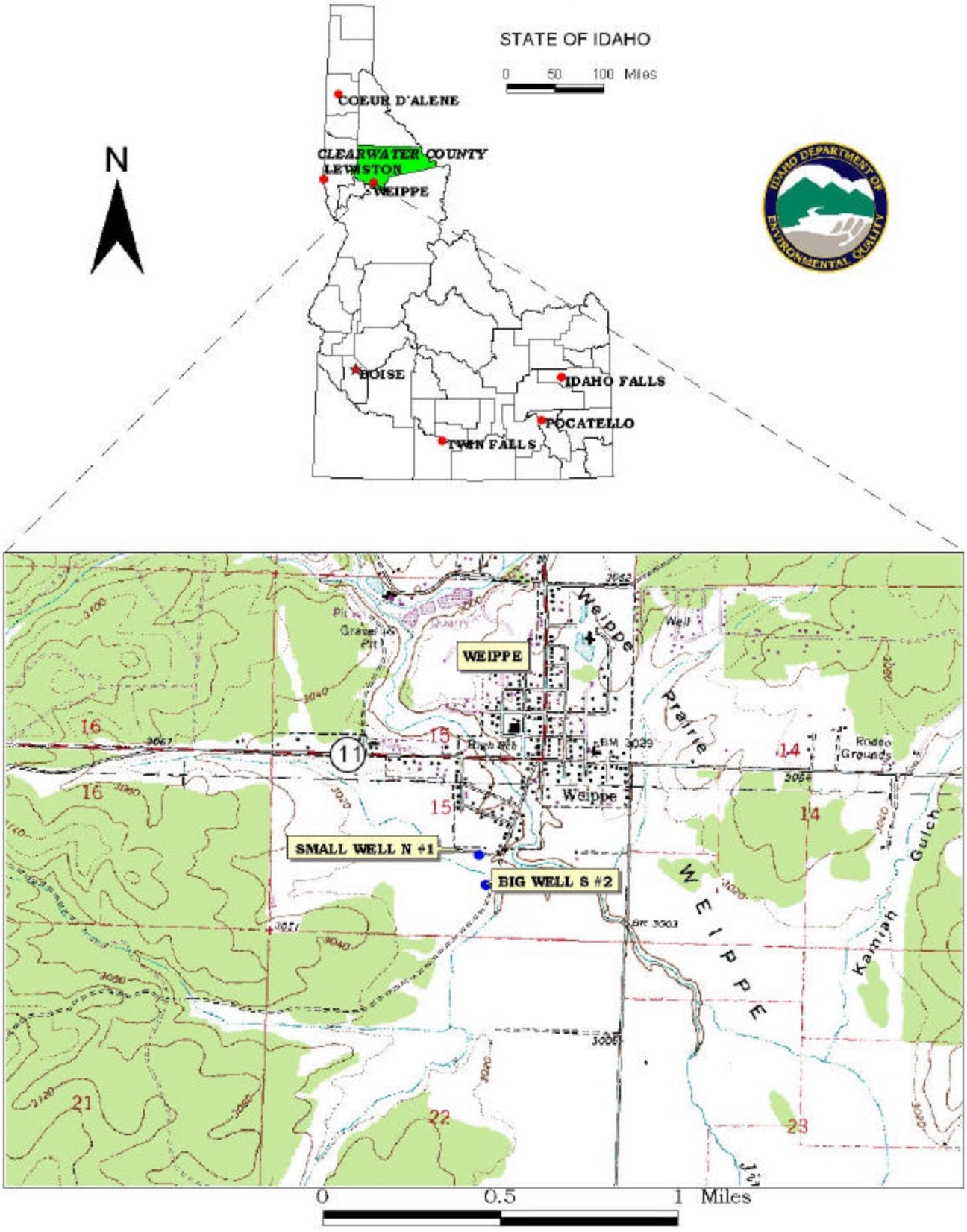
No VOCs or SOCs have ever been detected in the system. Trace concentrations of the IOCs fluoride, lead, nitrate, and sodium have been detected in Well #1 and inthe distribution system, but at concentrations significantly below MCLs as set by the EPA. Alpha and beta particles (radionuclides) have also been detected in the distribution system and the Well #1 at levels below the MCLs. Total coliform bacteria have been detected in the distribution system in November 1999 and in October 2001. However, no coliform bacteria have been detected at either of the wells.

Because Well #2 only supplies water to the system for 60 days of the year, the well is only tested for nitrate and total coliform bacteria. No nitrate or total coliform bacteria have been detected in the well.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water in the vicinity of the City of Weippe wells. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including operator input, local area well logs, and hydrogeologic reports (detailed below).

FIGURE 1. Geographic Location of the City of Weippe



The conceptual hydrogeologic model for the Weippe source wells is based on interpretation of available well logs. The source well logs indicate water is derived from a basalt aquifer. The basalt is of the Grande Ronde Formation of the Columbia River Basalt Group from the Miocene epoch. Bedrock geology is based on the geologic map of the Hamilton quadrangle at a scale of 1:250,000 (Rember and Bennett, 1979). Crystalline bedrock of the Pre-Cambrian eon and metamorphic rocks associated with the Idaho Batholith crop out within a mile of the sources.

The ground elevation is approximately 3020 feet above mean sea level (msl). Discharge from the source wells is less than 300 gpm. Little information is known about the hydrogeology of the area. Well logs are available for both sources.

There are several boundaries in the Weippe area. The contacts of crystalline rock of the Idaho Batholith with the basalt flows of the Columbia River Basalt group forms boundaries to the north and west (Rember and Bennett, 1979). A Pre-Cambrian island lies to the northwest of the sources. A northwest-southeast trending fault is mapped to the southwest of the sources.

Grasshopper Creek runs parallel to the highway, which is near the sources. It is not known whether the creek is gaining or losing near the sources but it is believed to be a losing stream based on the topography near the creek. The Creek may act similarly to Paradise Creek, which flows through Moscow, Idaho (also a losing creek).

Jim Ford Creek, near the sources, may act as a losing creek in this area based on the topography of the area.

The crystalline rock/basalt contacts and the Pre-Cambrian island are modeled as no-flow boundaries. The fault was not put into the model as a boundary because its hydrogeologic properties are not known.

Segments of Grasshopper Creek were modeled as a negative flux boundary with a flux rate of –3 cubic feet per day per foot ($ft^3/d/ft$). It is estimated that Grasshopper Creek acts similarly to Paradise Creek in the Moscow Basin. Paradise Creek is modeled as a losing creek with a flux of –3 $ft^3/d/ft$.

Segments of Jim Ford Creek were also modeled as a negative flux boundary with a flux rate of –1 $ft^3/d/ft$. The flux rate may be as large a flux of Grasshopper Creek but a more conservative capture zone (e.g. larger) is generated using a smaller flux rate.

A constant head boundary was placed about 10,000 meters northwest of the source wells to give the model a reference head and to establish a ground water flow direction, which allowed for a fair model calibration. The location and elevation of the constant head were determined based on model calibration.

No recharge data are available for the Weippe area. The elevation of Weippe is similar to North Tomer Butte, whose source well was modeled using 4 inches per year (in/yr) of recharge.

The amount of areal recharge used in the model for the Weippe sources is 4 in/yr.

The WhAEM model is used to delineate the capture zones. Nearby wells were used for test points in the WhAEM simulations. Information on test points was obtained from a search of the Idaho Department of Water Resources database available on the Internet. The locations of the test points are limited to information supplied on well logs, typically the quarter-quarter section (0.25 $mile^2$). Therefore, the accuracy of the test point elevation and the static water elevation is dependent upon the accuracy of the driller's log and the topographic relief in the quarter-quarter section.

The capture zones delineated herein are based on limited data and must be taken as best estimates. If more data become available in the future these delineations should be adjusted based on additional modeling incorporating the new data.

The delineated areas for the City of Weippe wells can best be described as three circles that extend radially: 2,100 feet for the 3-year TOT zone, 2,600 feet for the 6-year TOT zone, and 3,000 feet for the 10-year TOT zone (Figure 2 and Figure 3). The actual data used by the University of Idaho in determining the source water assessment delineation areas is available from DEQ upon request.

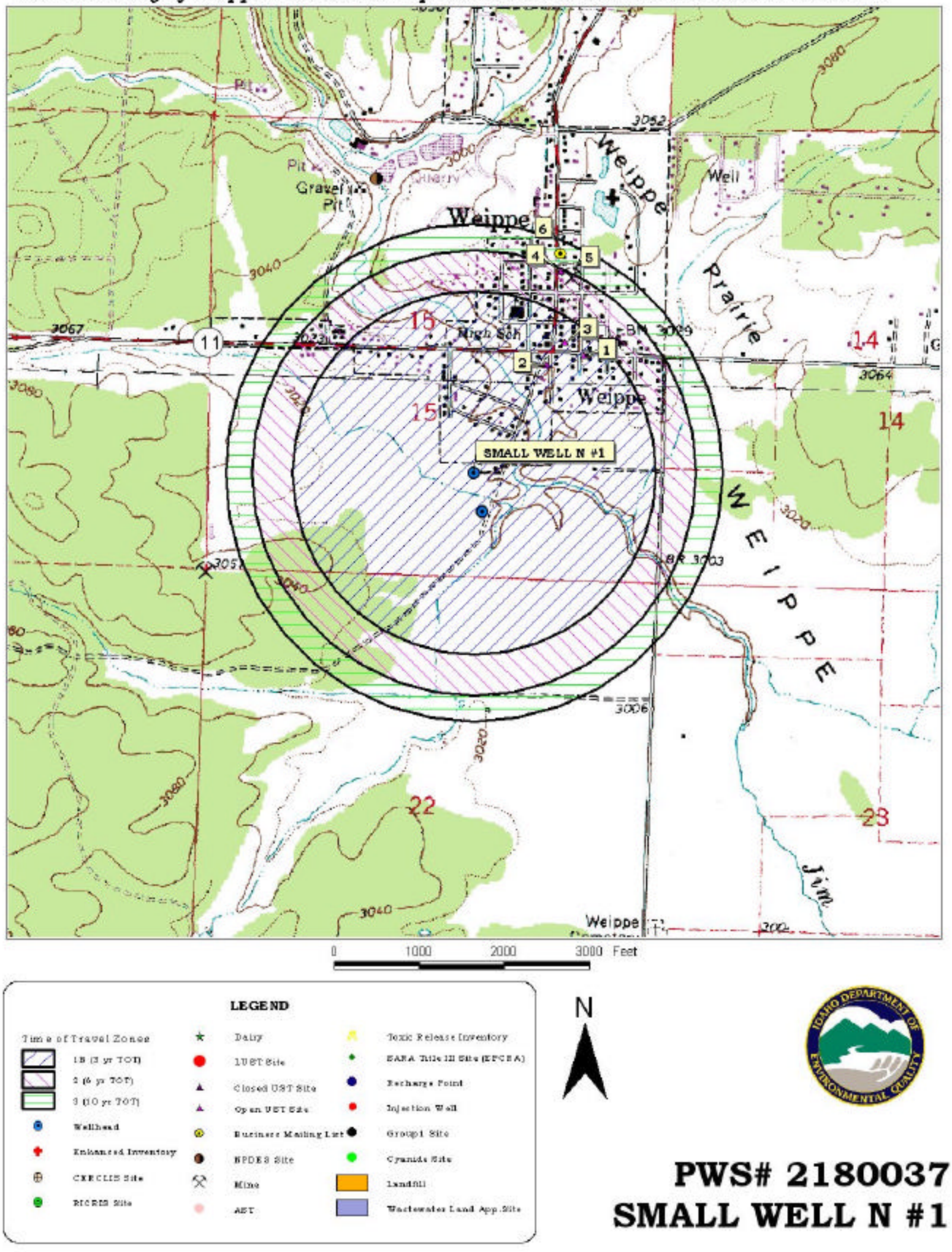
Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area and the surrounding area of the City of Weippe wells is predominantly woodland.

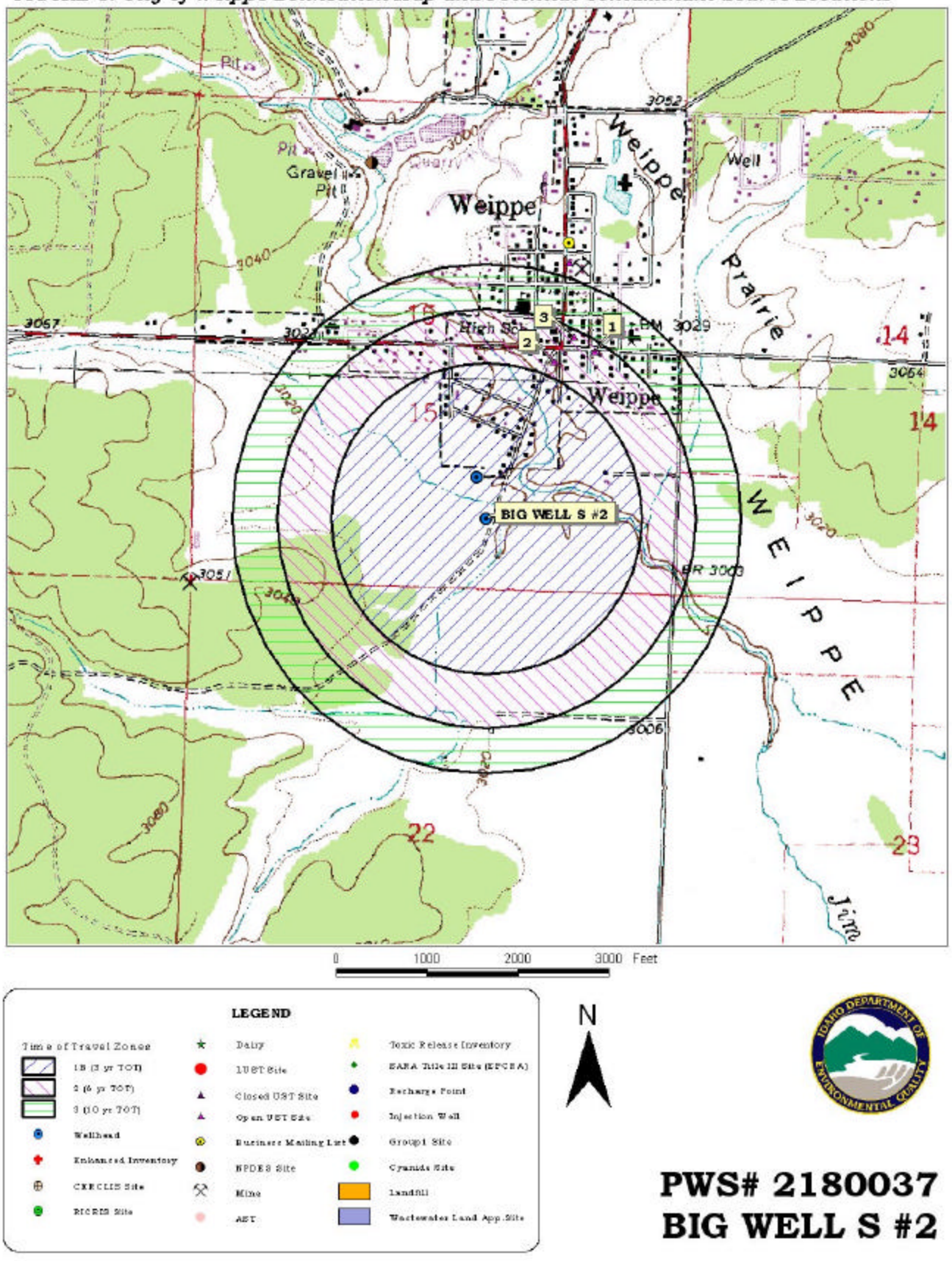
It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

FIGURE 2. City of Weippe Delineation Map and Potential Contaminant Source Locations



PWS# 2180037
SMALL WELL N #1

FIGURE 3. City of Weippe Delineation Map and Potential Contaminant Source Locations



Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in November and December 2002. The first phase involved identifying and documenting potential contaminant sources within the City of Weippe source water assessment areas (Figure 2 and Figure 3) through the use of field surveys, computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water assessment areas of both wells of the City of Weippe contains Highway 11, an improved road, underground storage tank (UST) sites where the tanks have been removed, and a taxidermy business. The delineated area for Well #1 also includes a few more USTs and a mine. Additionally, the 1995 Ground Water Under Direct Influence (GWUDI) field survey indicates that a pasture with horses and cattle, a drainage ditch, and Jim Ford Creek are within the 3-year TOT zone of both wells. Table 1 and Table 2 below list the potential contaminant sources within the delineations of each well.

Table 1. City of Weippe, Well #1, Potential Contaminant Inventory and Land Use

Site	Description of Source[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
1	UST-Closed	0-3 YR	Database Search	VOC, SOC
2	UST-Closed	0-3 YR	Database Search	VOC, SOC
3	UST-Closed	0-3 YR	Database Search	VOC, SOC
4	UST-Closed	3-6 YR	Database Search	VOC, SOC
5	Mine	3-6 YR	Database Search	IOC, VOC, SOC
6	Taxidermy	6-10 YR	Database Search	IOC, SOC
	Improved Road	0-10 YR	GIS Map	IOC, VOC, SOC, Microbials
	Highway 11	3-10 YR	GIS Map	IOC, VOC, SOC
	Jim Ford Creek	0-10 YR	GIS Map	IOC, VOC, SOC, Microbials
	Drainage Ditch	0-3 YR	GWUDI Survey	IOC, VOC, SOC, Microbials
	Pasture- cattle and horses	0-3 YR	GWUDI Survey	IOC, SOC Microbials

[1] UST = underground storage tank

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 2. City of Weippe, Well #2, Potential Contaminant Inventory and Land Use

Site	Description of Source[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
1	UST-Closed	3-6 YR	Database Search	VOC, SOC
2	UST-Closed	3-6 YR	Database Search	VOC, SOC
3	UST-Closed	3-6 YR	Database Search	VOC, SOC
	Improved Road	0-10 YR	GIS Map	IOC, VOC, SOC, Microbials
	Highway 11	3-10 YR	GIS Map	IOC, VOC, SOC
	Jim Ford Creek	0-10 YR	GIS Map	IOC, VOC, SOC, Microibials
	Drainage Ditch	0-3 YR	GWUDI Survey	IOC, VOC, SOC, Microbials
	Pasture-cattle and horses	0-3 YR	GWUDI Survey	IOC, SOC, Microbials

[1] UST = underground storage tank

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix A contains the susceptibility analysis worksheets for the system. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone (aquitard) above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity rated low for both wells of the City of Weippe. Area soils are poor to moderately drained, reducing the scores. The well logs indicate that the vadose zone of both wells is composed mostly of clay and granite, low permeability layers that slow the movement of contaminants to the aquifer. Several layers of ashy clay are present above the producing zones of both of the wells, creating aquitards that slow the downward migration of contaminants and further reducing the scores. However, first ground water for Well #1 is found only at 285 feet below ground surface (bgs) and first ground water for Well #2 is found only at 91 feet bgs.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey was conducted in 2001 for the system.

Well #1, the primary well of the system was drilled in 1974 to a depth of 385 feet bgs. It has a 0.250-inch thick, six-inch diameter casing placed to 355 feet bgs into fractured basalt. The annular seal is set to 18 feet bgs into soft gray clay. The highest production zone of the well is found between 360 feet to 385 feet bgs and the static water level is found at 220 feet bgs.

Well #2 was drilled in 1977 to a depth of 595 feet bgs. It has a 0.375-inch thick, 16-inch diameter casing set to 149 feet bgs into hard black basalt followed by a 0.330-inch thick, 12-inch diameter casing set to 425 feet bgs into basalt. The casing is sealed down to 149 feet bgs into hard black basalt. The casing is screened between 326 feet and 350 feet bgs and again between 420 feet and 595 feet bgs. The static water level is found at 203 feet bgs.

The system construction of both wells of the City of Weippe is moderately susceptible. According to the 2001 sanitary survey, the wellhead and surface seals of both wells are maintained to standards and both wells are vented properly. Additionally, both wells are properly protected from surface flooding and located outside a 100-year floodplain. The casings and annular seals of both wells do not extend to low permeability units. However, the highest production zones for both wells are found at depths greater than 100 feet below the static water level.

Though the wells may have been in compliance with standards when they were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. A six-inch diameter casing requires a thickness of 0.280-inches and a twelve-inch diameter casing requires a thickness of 0.375-inches. Therefore, both wells did not meet the well construction standards and were assessed an additional point for system construction.

Potential Contaminant Source and Land Use

Both of the City of Weippe wells rated moderate for IOCs (e.g. nitrates, arsenic), VOCs (e.g. petroleum products, chlorinated solvents) and SOCs (e.g. pesticides), and low for microbial contaminants (e.g. bacteria). The potentially contaminating sources identified by the GWUDI field survey and the DEQ databases in the 3-year TOT zones contributed to the land use scores of the wells. The predominant woodland that surrounds both wells reduced the overall potential contaminant land use scores.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or repeated detections of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. Both wells rate moderately susceptible to all potential contaminant categories.

Table 3. Summary of City of Weippe Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	L	M	M	M	L	M	M	M	M	M
Well #2	L	M	M	M	L	M	M	M	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

The City of Weippe drinking water system consists of two ground water wells: Small Well N #1 and Big Well S #2. Well #1 is the primary well of the system and produces approximately 135 gpm of water. Though it is the smaller of the two wells, it supplies water to the City of Weippe and also to Pleasant Acres. Well #2 is used for less than 60 days per year as a backup well and produces approximately 275 gpm of water. Both wells are located approximately one-fourth mile south of the City of Weippe near Jim Ford Creek. Well #1 is approximately 450 feet north of Well #2. The drinking water from the wells is stored in a 250,000-gallon metal standpipe tank that was installed in 1968. No treatment system exists at the wells but chlorine is added to the storage tank when contamination is detected or when the lines have been repaired. The City of Weippe drinking water system currently serves approximately 500 people through 225 connections (Figure 1).

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Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the City of Weippe, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. Actions should be taken to keep a 50-foot radius perimeter clear of all potential contaminants from around the wellhead. Any contaminant spills within the delineation areas should be carefully monitored and dealt with. As much of the designated protection areas are outside the direct jurisdiction of the City of Weippe drinking water system, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the wells should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include proper lawn and garden care practices, hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office (208) 799-4370

State DEQ Office (208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper, mlharper@idahoruralwater.com, Idaho Rural Water Association, at 208-343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Idaho Division of Environmental Quality, 2001. Sanitary survey for City of Weippe.

Idaho Division of Environmental Quality, 1995. GWUDI field survey for City of Weippe.

Freeze, R.A., and Cherry, J.A.; 1979. Groundwater, Prentice Hall, Englewood Cliffs, NJ, 604p.

Osiensky, J.L., Nimmer, R.E., and McKenna, J.; 2000. Moscow Basin Source Water Assessment Report, IDEQ.

Rember, W.C., and Bennett, E.H.; 1979. Geologic Map of the Hamilton Quadrangle, Idaho, Idaho Bureau of Mines and Geology, Moscow, ID.

Williams, B.C., Nimmer, R.E., and Owen, A.; 2001. Clearwater Plateau Source Water Assessment Report, IDEQ.

Appendix A

City of Weippe
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : WEIPPE CITY OF Well# : SMALL WELL N #1

Public Water System Number 2180037 12/30/02 2:34:41 PM

1. System Construction		SCORE			
Drill Date	7/11/74				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2001			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
	Total System Construction Score	3			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
	Total Hydrologic Score	1			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	5	6	7	4
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	5	6	7	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	12	12	8
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		17	17	17	8
4. Final Susceptibility Source Score		7	7	7	7
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : WEIPPE CITY OF Well# : BIG WELL S. #2

Public Water System Number 2180037 12/30/02 4:21:42 PM

1. System Construction		SCORE
Drill Date	10/21/77	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	2001
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	YES	0
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		3

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	YES	0
Total Hydrologic Score		1

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	4	3	4	4
(Score = # Sources X 2) 8 Points Maximum		8	6	8	8
Sources of Class II or III leacheable contaminants or	YES	4	3	4	
4 Points Maximum		4	3	4	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	9	12	8
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		17	14	17	8
4. Final Susceptibility Source Score		7	7	7	7
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate